

The Stand Manager

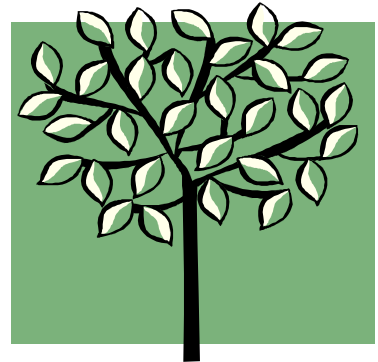
**Technical Development, Planning and Utilization
Branch Newsletter
NC Forest Service - NCDA & CS**

Tech Updates: Adapting to Change—How Will You Respond?

The NC Forest Service is adapting to new department leadership direction and significant regional and national priorities that have been identified previously in Statewide Forest Resource Assessments that are now called Forest Action Plans. The National Association of State Foresters (NASF) has launched a new website that provides a one-stop portal to track Forest Action Plans and trends nationwide. The website is (www.forestactionplans.org)

The call to arms from these plans are to be more strategic in program delivery and the allocation of agency resources toward priority areas of interest and concern at both the state and regional level. To do this will require an increased cooperative effort between various states, agencies, and partner organizations.

It will also require an increased effort by each individual to seek out new resource management opportunities and programs that could benefit from your involvement and participation along with performing our traditional activities such as tree planting and fire suppression. In order to remain relevant as a resource management agency, we must be willing to adapt our services to meet the changing needs of our customers.



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Pine Silviculture

By Kim Shumate

Identifying Longleaf Pine Restoration Opportunities in Eastern North Carolina Using GIS Tools

The NC Longleaf Mapping Team, on behalf of the NC Longleaf Coalition has been undertaking GIS modeling work to identify potential longleaf pine restoration opportunities. Utilizing criteria collaboratively developed by a wide range of stakeholders, the Team has assembled a comprehensive inventory of existing longleaf pine using currently available GIS layers in North Carolina and has developed a GIS modeling approach that can help stakeholders identify potential longleaf pine restoration and enhancement opportunities. The NC Longleaf Mapping Team feels that this approach, where GIS data is available or can be collected, can serve as a potential template for identifying longleaf pine restoration opportunities across the historic longleaf range.



At the landscape scale, identifying potential longleaf pine restoration opportunities is a function of the geographic coincidence of physical characteristics of the site, the feasibility of managing longleaf pine forests in particular locations over time, and overlapping organizational and ownership interests that facilitate financing and partnerships.



Longleaf Shelterwood Harvest @ BLSF

This Initiative will focus on the historical range of longleaf pine in NC, SC and VA, with special emphasis in the Significant Landscapes identified in the **Range-wide Conservation Plan for Longleaf Pine (America's Longleaf, 2009)**. This Initiative is intended to help America's Longleaf reach their regional goal of increasing longleaf ecosystem acres from 3.4 million to 8 million in 15 years.

Some specific actions that are planned using this competitive grant will include the completion of an updated Action Plan in NC for the restoration and management of Longleaf Pine Ecosystems. Hire a GIS specialist to build geoprocessing tools that incorporate data from NC, SC, and VA to create a web-based LIDST.

North Carolina Forest Service is planning to contract with the Longleaf Alliance to conduct Longleaf 101 courses and workshops within the ACP region to benefit resource managers and landowners, and to develop educational materials. A NC Longleaf Summit is also planned for 2013.

Nursery & Tree Improvement

By Ken Roeder—NCFS Forest Geneticist

NCFS Nursery & Tree Improvement Program Working on Genetically Improved 2nd Generation Longleaf Pine

The North Carolina Forest Service's Tree Improvement Program has assessed older longleaf pine genetic field studies and has identified superior 2nd generation individuals that will form the basis of our next generation seed production population. Buds and branches from these newly selected individuals will be grafted onto seedling rootstock for future deployment in a new longleaf pine orchard.

Improved growth and quality gains can be expected by selecting trees for superior form class, crown development, increased disease resistance, and excellent growth for pole products and sawtimber.

- ◆ **Work has already begun on the Establishment of Genetically Improved 2nd Generation Longleaf Pine Seed Orchards**
- ◆ **Full Sib Breeding of Orchard Parents Planned for Spring 2012**



Pollen from our best 1st generation seed orchard trees was collected in spring 2011. This pollen will serve as the core to a new breeding effort during the spring of 2012. We expect to make full sibling crosses with this pollen. Seed collection and a new set of genetic field tests of this material will follow. Whether these crosses are made will depend on climate effects and the vigor of the 2012 flowering crop of orchard trees. The Nursery and Tree Improvement Branch continues to work on new selections for several tree species.

Forest Utilization

By Clay Altizer

NCFS to Assist with Regional Secondary Wood Using Industry Directory

North Carolina is one of 6 states (NC, KY, VA, SC, GA, FL) that will participate in the development of a regional secondary wood using industry directory that will be published online and as a hard copy. A lack of current, updated secondary mill directory information can hinder wood flow through the entire wood supply chain, future production opportunities and final product consumption by potential end users and customers.



The purpose of this project is to collect additional secondary wood using directory information to bridge the existing information gap that may exist due to new business opportunities that have been created. This project should also help to provide better linkages among timber producers, primary and secondary wood industries and the finished product users. Keeping forests in forests is only possible when the timber owners have markets to sell their wood and, in turn, the existing primary mills can sell their products to secondary mills for final consumer product manufacturing.

A very valuable first product, even before the directory is produced, will be a definition of secondary manufacturers and directory categories. This will lead to a better understanding of common types of secondary wood product manufactures in North Carolina. The project's end results and final products will be a multi-state online interactive map showing the location and major characteristics of secondary wood using mills, factories, and other manufacturing establishments.

USFS S&PF Funds Demonstration Plantings for Forest Biomass in NC, SC, and GA

By Clay Altizer

Future expansion of the biofuels, bioenergy, and wood pellet industries in NC, as well as other SE states, will result in increased use of forest biomass. Development of cost-effective, alternative planting designs to produce biomass in addition to traditional forest products is being researched by forest industry and state agencies. USFS has funded a multi-state grant that will establish demonstration plantings for landowner outreach to encourage production of biomass in addition to traditional forest products. The plantings will be distributed across three states (GA, NC, & SC) to experiment with different planting designs and for comparison purposes. Fact sheets that include costs, potential yields, and financial analyses will be developed for each planting to use for landowner education and outreach.

The objectives of this grant are to establish a network of demonstration stands that provide (1) cost-effective, alternative strategies for producing biomass in addition to traditional forest products, (2) opportunities for landowner outreach, and (3) comparisons of key decision factors such as planting stock, tree spacing, and silvicultural treatments that affect growth potential. Demonstration plantings have proven to be an effective method to transfer new technology to forest landowners.



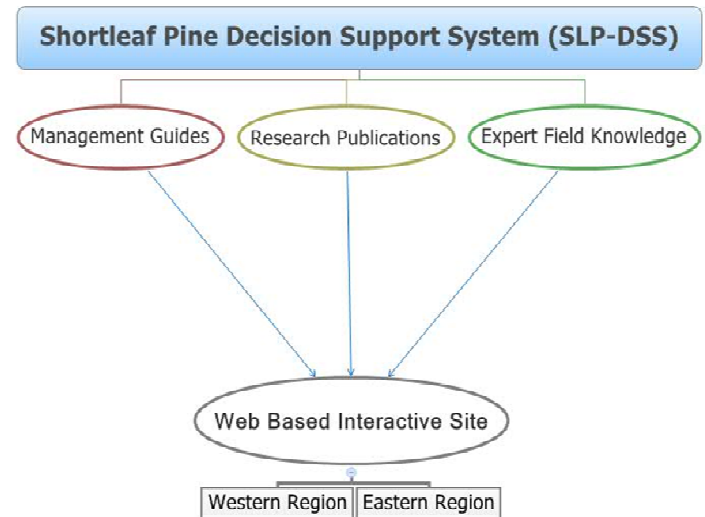
MCP Trees on right. Biomass Trees on left

Shortleaf Pine Decision Support System (SLP-DSS)

By Ron Myers

The **TDP Branch of the NC Forest Service** is working on the development of a **Shortleaf Pine Decision Support System (SLP-DSS)** to help serve as a tool to inform, educate, and facilitate action by landowners and resource managers in adopting and implementing management practices that promote increased shortleaf pine in the southeastern region.

A collective effort is currently ongoing between several states to review past management guidelines, applied research studies, past literature, and knowledge from resource managers to incorporate this information into a decision support system.

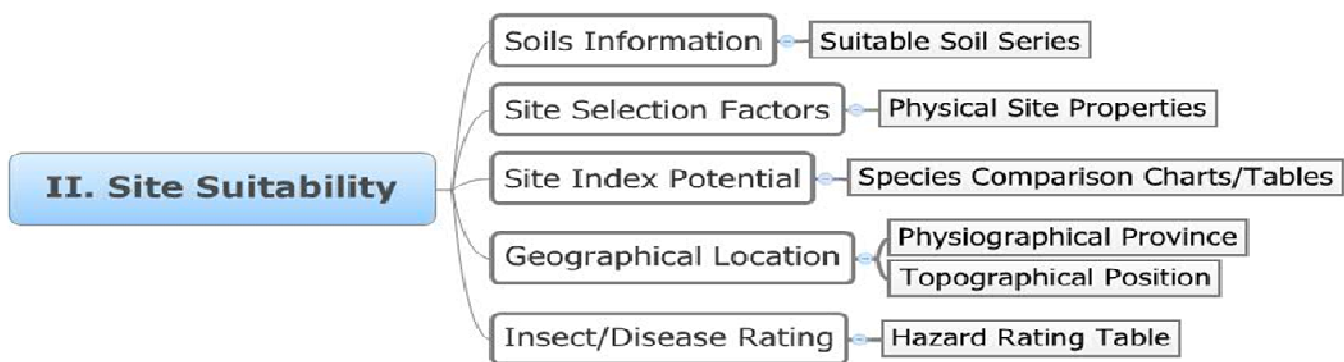


This decision support system may be a set of tools or guidelines that can help a landowner to decide on a forest stand treatment or help the land manager to develop a silvicultural prescription. A shortleaf pine decision support system (SLP-DSS) outline was developed for NC with broad system categories.

The 5 primary SLP-DSS categories will include topics and subtopics on the following:

(1) History, (2) Site Suitability, (3) Stand Management, (4) Forest Health, (5) Resources/Tools.

The SLP-DSS will be a flexible system where additional categories or content can be added to fill in specific resource needs or knowledge gaps over time or to customize content for a particular region. The flexibility of this system should allow interested organizations to populate these primary categories with specific management guides or publications that may be utilized or referenced within a particular region.



A conceptual summary of the site suitability components and subtopics are presented above. One of the first categories that will receive increased efforts on this project in NC will be site suitability. Future efforts may include building GIS tools based on soils and site factors to identify potential sites that may be suitable for future restoration and management along with site index comparison charts or tables.

For more information or to get the full outline of this SLP-DSS project contact Ron.Myers@ncagr.gov

Forest Health—Technology Transfer

By Jason Moan—FHM Coordinator

2011 Forest Health Survey Highlights

2011 was an active year for forest health in North Carolina. Over the course of last winter, Forest Health - East staff surveyed the southeastern part of the state for the invasive and devastating laurel wilt disease. Since 2008, the disease had been found no farther north than Horry County, South Carolina. However, in late March 2011, our fears were confirmed when samples from dying redbay trees found in southeastern Bladen County were confirmed as positive for laurel wilt. A subsequent survey also found the disease present in Columbus, Pender, and Sampson Counties.

Laurel wilt is caused by a fungal pathogen (*Raffaelea lauricola*) that is introduced into trees in the Laurel family by a tiny non-native beetle known as the redbay ambrosia beetle (*Xyleborus glabratus*). Trees and shrubs susceptible to this disease include redbay and swampbay, and to a lesser extent, sassafras, spicebush, pondspice, and pondberry.

The host trees are killed by an ambrosia fungus that the female beetle carries as she bores into the tree. The fungus spreads inside the tree essentially choking it of water, resulting in tree death. This fungus spreads quickly and the trees often die in as little as 30 days after infection. The ambrosia fungus is virulent and it appears tree mortality can occur in trees attacked by a single beetle.



Laurel Wilt along Colly Swamp in Bladen County

Laurel wilt isn't the only invasive pest for which NCFS is currently surveying. In the fall of 2011, a survey was completed in the counties near the Tennessee border for another invasive pest, the walnut twig beetle and its fungal associate, *Geosmithia morbida*. This beetle and its fungal associate are responsible for causing a disease called thousand cankers disease in black walnut. This disease was confirmed in 2010 in four counties surrounding Knoxville, Tennessee. The NC Forest Service and several cooperating agencies surveyed over 989 miles of roads and tallied 20,445 healthy walnut trees while looking for this pest. Thousand cankers disease was not found during the survey and is not known to exist in North Carolina at present.

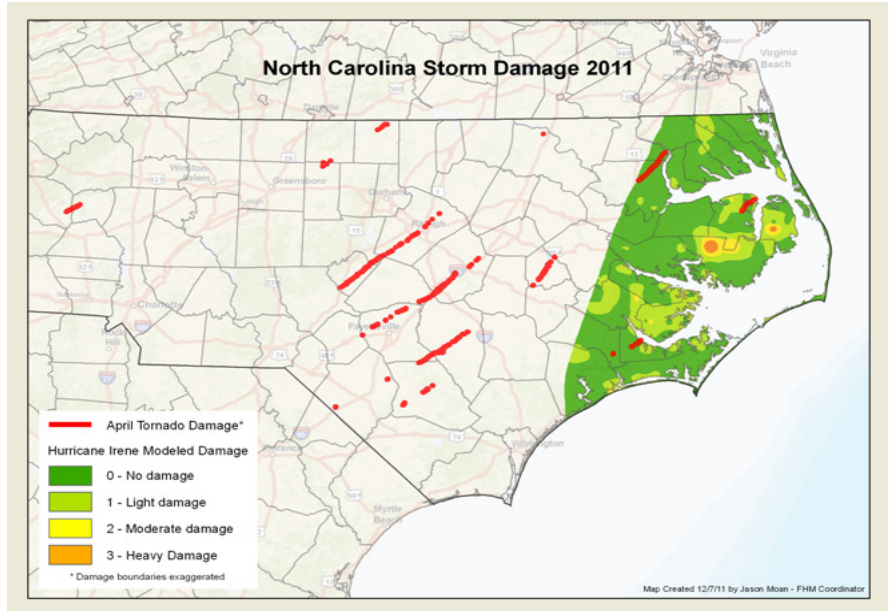
The NC Forest Service continues to work with our federal partners and state cooperators to monitor and conduct surveys for several invasive pests. Surveys continue to be conducted for sudden oak death and emerald ash borer, neither of which have been found affecting the forests of North Carolina to date. Efforts also continue to monitor and control infestations of hemlock woolly adelgid and gypsy moths in the state.

Drought conditions continued to stress trees in affected areas and several severe storm systems passed through the state, including two major storm events. Formal timber damage surveys were conducted for both the April 2011 tornado events and Hurricane Irene with cooperation and assistance from district personnel. The survey for the tornadoes was conducted aerially by flying the paths of the tornadoes as identified by the National Weather Service. Timber damage was drawn onto aerial photos of the affected areas using digital aerial sketchmapping technology.

Each damage polygon was visually classified and assigned to a damage class as follows: **Light - 1-25%, Moderate - 25-50%, Heavy - 50-75%, and Severe - more than 75%** of timber damaged. Based on the survey data collected, an **estimated 4,749 acres of timber in 22 counties showed some degree of damage from the storms with an estimated value loss of approximately \$4 million.**

An aerial timber damage survey was also conducted following Hurricane Irene's landfall on the NC coast. Due to the nature of the storm, the hurricane survey could not be conducted in a similar manner to that completed for the April tornadoes. Instead, a systematic point grid was applied to the area identified by the National Weather Service as having had hurricane force winds plus a ten mile buffer.

The survey covered an area over 4.5 million acres. As the area was flown, the surveyors visually classified the timber damage classes in the same manner as was done for the tornados.



The timber damage across the survey area was estimated using a GIS process called interpolation. Interpolation allows us to create a continuous damage estimate across the affected area from a set of damage points. **The timber damage from the hurricane was estimated at over 287,000 acres in 18 counties, for an approximate loss in value of over \$79.5 million.**

Field Notes: Special Projects & FM Activities submitted by County personnel or Foresters

Ranger Training Classes of 2010



Ranger Training Level I Class with Instructors



Ranger Training Level II Class at Clemmons ESF

Hardwood Silviculture

“Trupp Planting” - A Non-Traditional Approach to Tree Planting

By Ron Myers

The concept of Trupp planting (pronounced “troop”) is based on the research effort of a German Forester named Dr. Hienz Gockl with the State Forest Service of North-Rhine Westphalia, Germany. **The term Trupp Planting translates loosely to mean “cluster reforestation”.** Trupp Planting is designed to maximize natural interaction while minimizing human inputs (i.e. herbicides, fertilizers, pruning, and protection) to produce a desired number of high quality hardwood trees/acre (Severs 2002). This type of group planting is a non-traditional approach to the systematic grid pattern planting, commonly used in pine silviculture.

Several researchers have indicated that at maturity, approximately 25-30 high quality oak trees/acre are needed to sufficiently occupy an acre. Using Dr. Gockl’s approach, only about 25-30 strategically identified clusters on an acre need to have a dominant oak crop tree on them. These planting clusters can be randomly installed over the tract wherever site conditions warrant without regard to spacing. The rest of the land can grow whatever nature or the landowner wants to grow there. The goal is to make sure you have a preferred tree survive at each of the 25-30 clusters or locations and that it is one of high quality.

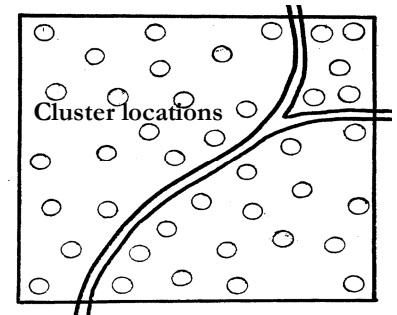


Diagram of Trupp Planting

Given this estimate, a planting recommendation would be to plant 10 to 15 oaks in small groups or clusters at a close spacing (3 or 6 feet apart), in each of the 25-30 locations across an acre. This will help to provide a good probability that at least one tree will have the ability to survive and produce a high quality crop tree in each location. Depending on the landowners objectives and expectations of future oak crop trees in the new stand, a range of 25-30 planting groups or clusters could be planned giving a range of 250 to 450 trees over the acre depending on how close the trees are planted to each other and the number of trees planted in each group and how many locations or clusters installed.

The close spacing of the trees planted in groups or clusters is designed to accomplish several goals. It creates early crown closure, that will help to shade out weed and brush competition, thereby potentially reducing the number of herbicide applications needed to control the competition. It encourages early natural pruning of lower branches, thereby improving bole quality and grade. The close spacing also helps competing trees to train each other to grow straighter and faster. It helps to provide some protection from predation, at least to the interior planted trees.

The challenge of any non-traditional tree planting project is documenting and finding the locations of planted trees for any follow-up treatments that may be needed in the future. A crop tree release treatment may be necessary to ensure that the growth and survival of the desired crop tree can be maintained throughout stand development. These planting groups or clusters could be marked with a tall PVC rod or suitable marker.



Group of Planted Willow Oak Trees after CTR Treatment

Source: Ron Severs. *Naturalists Notebook*. Minnesota Better Forests. Autumn 2002